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REMARKS

The Official Action of February 8, 2007 has been carefully considered and reconsideration of the application is respectfully requested.

Claims 1-4, 6-8, 9-12, 14 and 15 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Rodriguez et al. Claim 5 and 13 stand rejected under 35 USC 103(a) as allegedly being unpatentable over Rodriguez et al in view of Panepinto. Applicants respectfully traverse these rejections.

The claimed invention is based at least in part on Applicants' discovery that water of high salinity, such as sea water which is normally not suitable for leather processing, may be used in an initial (soaking) operation if the soaking in the saline water is done in the presence of a salt of an alkali metal or alkaline earth metal. Leather processing is water intensive and the present invention provides an option to use readily available seawater for leather processing

Rodriguez et al. (US Patent 3,254,938) disclose a method of leather processing whereby raw hides/skins are subjected to alkali treatment in presence of salt. The role of the salt here is to ensure that the unwanted swelling, likely to be caused due to the alkaline action, is controlled. The salt present in the processing liquor of Rodriguez et al. represses swelling of the hide/skin to be processed.

On the contrary, the process of the present invention is not intended to repress swelling of the hides/skins. It is a common knowledge in the modern leather trade that high salinity in the water to be used for leather processing jeopardizes the leather quality by repressing the swelling excessively. The unique feature of the present invention is that it provides the novel option to use sea water for leather processing to produce quality leather. The available prior art does not teach this and does not provide this result.

As quoted by the Examiner "Raw hides and skin mentioned in present invention indicate wet salted hides and skins, conventional Indian raw material, which consists at least 20% salt (W/W). Whereas Villa Rodriguez Pedro; et al., indicates a process of using salt for soaking dried skins free of any salt (which is done normally to remove interfibrillary proteins). The total salt content for soaking in Villa Rodriguez Pedro; et al., case is only 3% (30, 000 ppm) whereas the present invention deals with soaking hides and skins containing not less than 15% salt (W/W) in saline water having upto 30, 000 ppm of chlorides making total chlorides content to as high as 95, 000 ppm. Further taking in to consideration the composition of a dried skin, the protein content will be 75~80% with about 20-25% moisture. Hence typically for 100 kilos of dried skin the protein: salt ratio employed is about 80:3 (since 3% salt is added in soaking). For 100 kg of protein nearly 3.7 kilo salt is used. However in the present invention the protein content will be ~37% (Villa Rodriguez Pedro; et al., Col. 1, lines 35-41) and salt content ~14%. This material containing protein:salt ratio of 37:14 is treated with saline water containing ~3% salt i.e., total salinity being 14% from hide, 3% from water, making it 17%. So the protein:salt ratio employed in the present study is 37:17 i.e., for 100 kilos of protein nearly 46 kilos of salt is employed."

Further, it is stated that the cured hide/skin normally contains not less than 15% of salt on the hide/skin weight. The reference cited (page no. 172, Fundamentals of leather manufacture, Heideman) indicates presence of at least 12% salt on moisture free basis which would indicate presence of at least 36% salt on as such basis (3 times more). Further Rodriguez himself has indicated presence of 14.4% salt as given in Example 1 (column 6, lines 58-62). Hence it is reiterated the salinity levels would reach as high as 95,000 ppm when salted hides and skins are treated with water with salinity levels of 30,000 ppm

With reference to the Examiner's 4th comment on page 4 of the action, it is brought to the Examiner's attention that sodium hydroxide used is for hair removal and for opening up of the fiber structure. The calcium hydroxide is used to overcome the suppressive action of chlorides due to high salinity.

The two patents deal with two different aspects of leather processing. Rodriguez deals with the chrome tanning of hides and skins by a single step process wherein the hides and skins are treated with alkalis/salt to condition the hides and skins for tanning. The purpose of this operation is to remove the unwanted materials like interfibrillary proteins, hair and flesh from the hide/skin by alkaline treatment and use of mild salt solution. It should be noted that the hides and skins are treated with alkalis and salt during different stages of processing for different purposes in conventional leather making. The present invention deals with use of saline water for salt removal in leather making.

The procedure described by Rodriguez, a conventional process for leather processing and the present invention are described and shown in the figure below.

Rodriguez process:

The Rodriguez et al. process is a method that eliminates the separate soaking step. Rodriguez et al. teach a method wherein the steps 1 to 6 are integrated and carried out in a single step, using the same chemicals in various combinations. The process merely combines the various steps involved.

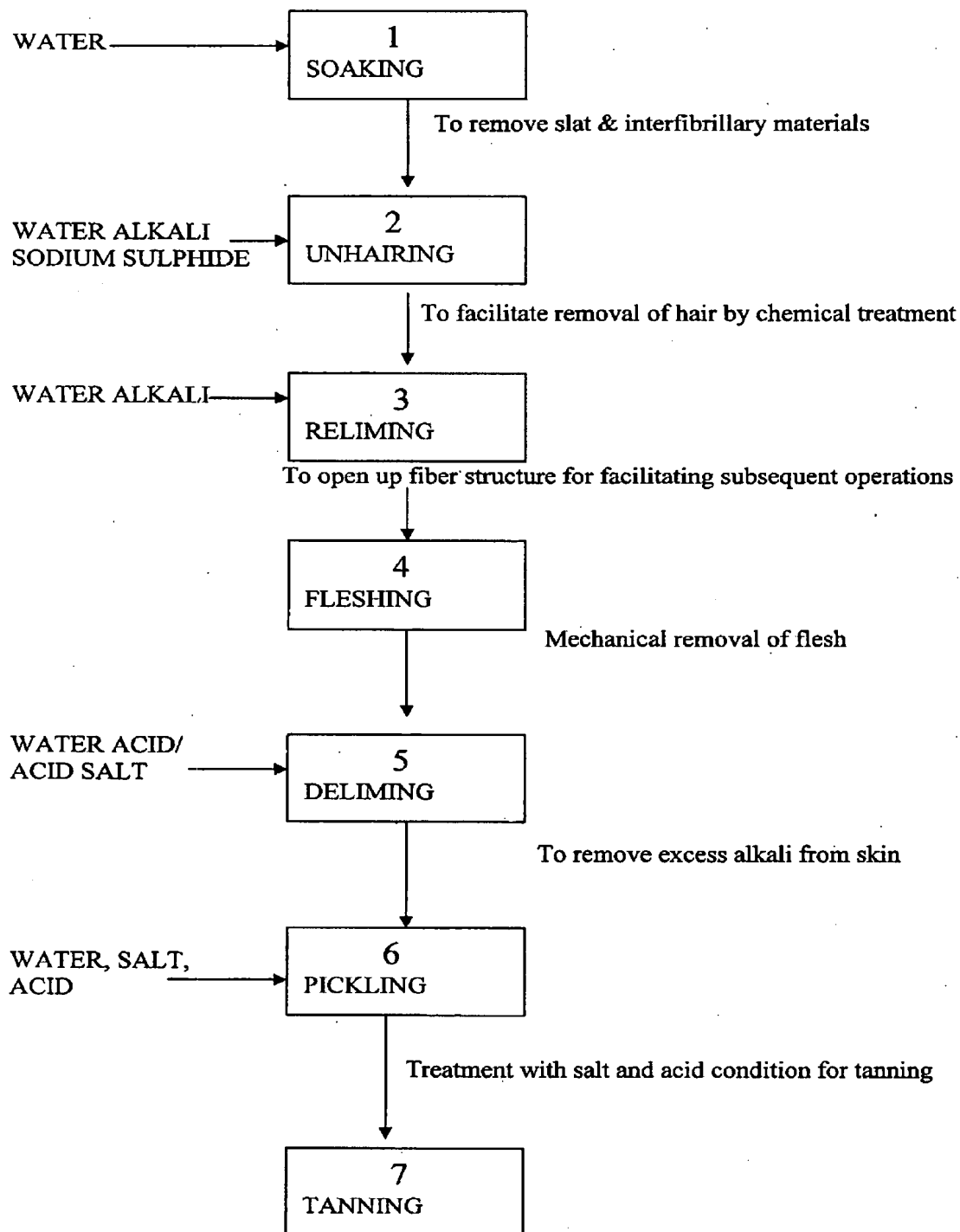
Conventional process

The hides and skins are initially treated with plain water to remove salt from skin, which is called soaking. Incidentally the interfibrillary protein in the hide/skin is removed due to the action of salt solution. Quality leather cannot be made unless the salt is removed from the skin.

Claimed Invention

The claimed invention defines the soaking operation in saline water. It is a technological challenge, which has been successfully met. It is the first time saline water has been used to remove salt from a solid matrix. In order to facilitate the release of salt from the matrix structure small quantities of alkali are employed. This method of using water of high salinity to remove salt from the solid matrix has been effectively used in the soaking operation of leather making. This is new and nonobvious.

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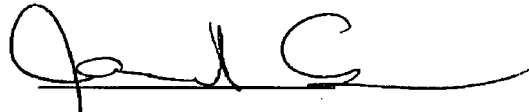


The present invention provides for an opportunity to utilize water with high dissolved solid content and salinity, to be used as a medium for leather processing which was considered unviable hitherto.

This process provides for use of seawater for leather processing, thereby creating a near inexhaustible alternative resource for leather processing. This is an innovation in leather making.

In view of the above, it is respectfully submitted that all rejections and objections of record have been overcome and that the application is now in allowable form. An early notice of allowance is earnestly solicited and is believed to be fully warranted.

Respectfully submitted,



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